

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**



**Subject with Code :** AE (20ME0333)

**Course & Branch:** B.Tech - ME

**Year & Sem:** III-B.Tech& II-Sem

**Regulation:** R20

**UNIT-I**

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|---|-----|--|----|-----|-----|
| 1 | (a) | Describe how power is transmitted from engine to wheels of a motor vehicle. Explain the function of main units involved  | L2 | CO1 | 6 M |
|   | (b) | How do you Classify the automobile engines   | L2 | CO1 | 6 M |
| 2 | (a) | Differentiate between S I engines and CI engines   | L2 | CO1 | 6 M |
|   | (b) | List out the components of I.C engine and its function   | L1 | CO1 | 6 M |
| 3 | (a) | What is Combustion? Explain the different types of Combustion Process  | L2 | CO1 | 6 M |
|   | (b) | Elucidate the direct injection type combustion chamber in C.I Engine   | L2 | CO1 | 6 M |
| 4 | (a) | List out various reasons for Abnormal combustion in Engines  | L1 | CO1 | 6 M |
|   | (b) | What is the difference between rear wheel drive and front wheel drive? Explain.  | L2 | CO1 | 6 M |
| 5 |     | Describe the following indirect injection type combustion chamber in Engine with Neat sketch<br><br>(i) Swirl Chamber (ii) Pre Combustion Chamber (iii) Air Cell orEnergy Cell | L2 | CO1 | 12M |
| 6 | (a) | Discuss the construction and working of various frames in automobile   | L2 | CO1 | 6 M |
|   | (b) | Mention various functions of chassis   | L3 | CO1 | 6 M |
| 7 | (a) | State the merits and demerits of the frame less construction of an automobile  | L1 | CO1 | 6 M |
|   | (b) | Write a note on the construction of a frame for an automobile chassis and explain why the frame is narrow at the front.  | L2 | CO1 | 6 M |
| 8 | (a) | Write characteristics of good chassis and frame  | L2 | CO1 | 6 M |
|   | (b) | Explicate front and rear wheel drive layout in detail with relevant sketch   | L2 | CO1 | 6 M |

9	(a)	What are the various design parameters to be considered while designing chassis frame	L5	CO1	6 M
	(b)	Discuss in detail about crankcase ventilation	L2	CO1	6 M
10	(a)	Draw the Valve timing diagram of four stroke diesel engine	L4	CO1	3M
	(b)	Why air fuel ratios of diesel engines are more than petrol engines?	L1	CO1	3M
	(c)	Identify the Functions of piston rings	L2	CO1	3M
	(d)	Write the firing order of 4 cylinder and 6 cylinder engine	L1	CO1	3M

### UNIT –II

1	(a)	Explain briefly about MPFI fuel injection system used in Automobiles	L2	CO2	6 M
	(b)	Fuel mileage with MPFI engines are more than normal injection systems. Justify.	L4	CO2	6 M
2	(a)	Discuss in detail about the CRDI engines	L2	CO2	6 M
	(b)	Differentiate between MPFI and CRDI fuel injection system	L2	CO2	6 M
3	(a)	Elucidate the working of turbocharger with a neat sketch	L2	CO2	6 M
	(b)	List out the advantages and disadvantages of turbocharger	L1	CO2	6 M
4	(a)	Explain the fuel supply system in diesel engine with line diagram	L2	CO2	6 M
	(b)	Differentiate between Turbo charger and Super charger	L2	CO2	6 M
5	(a)	Illustrate the working of pump circulation cooling system with a neat sketch	L2	CO2	6 M
	(b)	Explain about radiator and its components with a diagram	L2	CO2	6 M
6	(a)	State the necessity of Engine cooling system?	L1	CO2	6 M
	(b)	Describe the working of Thermo-syphon cooling system with a neat sketch	L2	CO2	6 M
7	(a)	What do you know about the emission norms? Discuss	L2	CO2	6 M
	(b)	How multipoint fuel injection in SI engine affects emissions from the engine?	L1	CO2	6 M
8	(a)	Explain different pollution control techniques adopted in SI and CI engines	L2	CO2	6 M
	(b)	Classify various types of alternate fuels available and mention their importance	L2	CO2	6 M
9	(a)	Elucidate the working of 3-way catalytic converter with a neat sketch	L2	CO2	6 M

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|----|-----|--|----|-----|-----|
|    | (b) | Write a note on emissions from alternative fuels like hydrogen, bio-mass and alcohol   | L2 | CO2 | 6 M |
| 10 | (a) | What are the sources of HC and NO <sub>x</sub> formation in petrol engine?<br>Explain various factors which effect the their formation | L1 | CO2 | 6 M |
|    | (b) | Discuss the effects of emissions on human health   | L2 | CO2 | 6M  |

### UNIT –III

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|----|-----|---|----|-----|-----|
| 1  | (a) | What are the functions of Engine Lubrication system?  | L1 | CO3 | 6M  |
|    | (b) | Explain the properties of Engine lubrications   | L2 | CO3 | 6M  |
| 2  | (a) | Describe the grading phenomena of Lubricant   | L2 | CO3 | 6M  |
|    | (b) | Is lubricant used in 2 stroke and 4 stroke engines are same? Explain  | L4 | CO3 | 6M  |
| 3  |     | Elucidate in detail about oil filter used in lubrication system with neat diagram.  | L2 | CO3 | 6M  |
| 4  |     | Discuss briefly about battery coil ignition system with a suitable Sketch and also mention its merits and demerits  | L2 | CO3 | 6M  |
| 5  |     | Explain briefly about Magneto coil ignition system with a suitable Sketch and also mention its merits and demerits  | L2 | CO3 | 6M  |
| 6  | (a) | State the necessity of Bendix Drive?  | L1 | CO3 | 6M  |
|    | (b) | Explain with neat sketch about Starting System in automobile  | L1 | CO3 | 6M  |
| 7  |     | Name various types of components used in Lighting System used in automobile with neat sketch  | L1 | CO3 | 6M  |
| 8  | (a) | Describe the circuit diagram of a Horn System   | L2 | CO3 | 6M  |
|    | (b) | Illustrate the working of speedometer of an automobile with a neat sketch   | L2 | CO3 | 6M  |
| 9  |     | Discuss in detail about following systems used in automobile<br>i) Wiper System ii) Fuel gauge (iii) Solenoid switch  | L2 | CO3 | 6M  |
| 10 |     | Write a short note of the following<br>(i) Need of an Ignition system<br>(ii) Importance of Lighting system in an automobile<br>(iii) Engine Temperature Indicator<br>(iv) Types of Engine lubricants | L1 | CO3 | 12M |

### UNIT –IV

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|---|-----|--|----|-----|----|
| 1 | (a) | What is the purpose of a clutch? List out its requirements | L1 | CO4 | 6M |
|   | (b) | Discuss in detail about the fluid coupling                 | L2 | CO4 | 6M |

2	Classify different types of clutches used in an automobile? Explain any one of them with neat diagram	L2	CO4	6M
3	(a) What are the different materials used for manufacturing of Clutch	L1	CO4	6M
	(b) Explain the working of a centrifugal clutch with a neat diagram.	L1	CO4	6M
4	(a) With the help of a neat sketch explain the construction of a propeller shaft.	L2	CO4	6M
	(b) What are the main components of Transmission system?	L1	CO4	6M
5	(a) List out various types of Gear boxes used in an Automobile.	L1	CO4	6M
	(b) Explain the working of sliding mesh gear box with a neat diagram.	L1	CO4	6M
6	(a) Elucidate the working of constant mesh gear box with a neat diagram.	L1	CO4	6M
	(b) With the help of a neat diagram Illustrate the working of a torque converter	L2	CO4	6M
7	(a) Describe the working of a synchromesh gear box	L2	CO4	6M
	(b) What is an overdrive? Explain its working with a neat sketch	L2	CO4	6M
8	(a) Explain the mechanism of Hotchkiss drive and torque tube drive	L2	CO4	6M
	(b) Describe the working principle of fluid fly wheel with the help of a sketch	L2	CO4	6M
9	(a) What is the function of Universal joint in an automobile	L1	CO4	6M
	(b) Elucidate in detail about Differential used in automobile with neat diagram	L2	CO6	6M
10	(a) Explain in details about Front Axle with neat diagram	L2	CO6	6M
	(b) Differentiate between rear axle and front axle drive system	L2	CO6	6M

#### UNIT –V

1.	(a) What are the different types of steering gears used in an automobile and mention the advantages of each gear	L2	CO6	6M
	(b) What are the functions and components of the steering system	L2	CO6	6M
2	Discuss in detail with a neat sketch the working of an Ackermann steering mechanism	L2	CO6	6M
3	Briefly explain about the Davi's Steering Mechanism with neat sketch?	L2	CO5	6M
4	Explain with the help of a neat layout about Rigid Axle Suspension system	L2	CO5	6M
5	(a) With the help of neat diagram explain the working of Wishbone type	L2	CO5	6M

	independent suspension system			
	(b) With a neat diagram explain the construction and operation of a shock absorber	L2	CO5	6M
6	(a) What is castor, camber and King pin inclination with respect to wheel geometry?	L1	CO6	6M
	(b) Write the method of wheel balancing	L2	CO5	6M
7	(a) Discuss the classification of brakes from different considerations	L2	CO5	6M
	(b) What are the different components of a hydraulic brake system? Explain	L2	CO5	6M
8	(a) Elucidate the working of a pneumatic braking system with a neat sketch	L2	CO6	6M
	(b) Illustrate the working of a vacuum braking system with a neat sketch	L2	CO6	6M
9	(a) What are the essential differences between mechanical brakes and hydraulic brakes?	L4	CO5	6M
	(b) Name the various kinds of springs used in suspension system of automobiles.	L1	CO5	6M
10	Discuss in detail about the following	L2	CO5	6M
	(i) ABS (ii) EBD (iii) Traction Control			

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